

PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION
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IMPORTANT FOREST ~~INSECT~~ OUTBREAKS IN OREGON AND WASHINGTON ^{1/}
IN 1957

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The extent and severity of forest insect outbreaks in Oregon and Washington increased in 1957 after 3 successive years of decline. Cooperative surveys recorded 2,129,440 acres of epidemic infestations in 1957, with 1,480,640 acres (69.5%) in Oregon and 648,800 acres (30.5%) in Washington. The trend in recent years has been as follows:

<u>Acreage of infestations</u>	
1953	8,196,320
1954	7,704,120
1955	2,248,820
1956	1,410,660
1957	2,129,440

Thirteen species of insects caused the outbreaks recorded in 1957, as follows:

Increasing infestations

Balsam woolly aphid
Engelmann spruce beetle
Larch budworm
Spruce budworm
Western pine beetle

Declining infestations

Douglas-fir beetle
Fir-engraver
Mountain pine beetle
Oregon pine ips

Reappearing infestations

Black-headed budworm
Silver fir beetles (2)
Spruce bud moth

Forest insect outbreaks in 1957 are summarized in table 1.

^{1/} Forest insect conditions in Lincoln, Pend Oreille, Spokane, Whitman, and parts of Ferry and Stevens counties in northeastern Washington are reported by the Intermountain Forest and Range Experiment Station, Ogden, Utah.

BARK BEETLES

1. Douglas-fir beetle (*Dendroctonus pseudotsugae* Hopk.)

From a peak of 5,071,750 acres recorded in 1954, outbreaks have declined steadily each year. Currently the total is 18,400 acres. The only large outbreak, covering 7,040 acres, is in Washington on the Colville Indian Reservation. In Oregon, the largest concentrations are on the Rogue River National Forest (4,800 acres) and on the Willamette National Forest (2,240 acres). Salvage of dead, dying, currently infested, and windthrown trees is recommended.

2. Engelmann spruce beetle (*Dendroctonus engelmanni* Hopk.)

Current infestations cover 32,000 acres, compared with 14,880 acres in 1956. In Oregon, the largest concentrations of damage are on the Wallowa-Whitman National Forest, with 19,520 acres in 28 centers. Salvage operations are recommended. In Washington, the largest areas of damage are on the Yakima Indian Reservation, where 3,840 acres of infestation occur in two centers.

3. Fir-engraver (*Scolytus ventralis* Lec.)

Outbreaks of this beetle are mostly on alpine types in the Cascade Range. It covers 21,280 acres, compared with 24,960 acres in 1956. No control is warranted.

4. Mountain pine beetle (*Dendroctonus monticolae* Hopk.)

Attacks on the four major species of pines in the region now cover 212,000 acres, compared with 252,760 acres in 1956. Losses are heaviest in stands of western white pine (131,840 acres), with the bulk of the damage (102,560 acres) in Washington. Western white pine stands on the Gifford Pinchot National Forest are being severely damaged on 55,840 acres. In Oregon, heaviest damage to white pine (24,320 acres) is on the Willamette National Forest.

Outbreaks of the mountain pine beetle in lodgepole pine cover 76,640 acres. Heaviest losses are on the Deschutes National Forest (17,440 acres) and Klamath Indian Reservation (18,880 acres). Ponderosa pine on 3,360 acres, mostly on the Malheur National Forest, is suffering heavy kill by the mountain pine beetle. One small center of damage to sugar pine, covering 160 acres, is on the Rogue River National Forest. Although many of the infested stands are inaccessible, salvage is recommended where possible.

Table 1.--Forest insect epidemic infestations in Oregon and Washington, 1957 ^{1/}

Insects	Oregon		Washington		Region Total	
	: Infestation:		: Infestation:		: Infestation:	
	: centers	: Area	: centers	: Area	: centers	: Area
Bark beetles:	Number	Acres	Number	Acres	Number	Acres
1. Douglas-fir beetle	49	10,880	28	7,520	77	18,400
2. Engelmann spruce beetle	37	25,280	10	6,720	47	32,000
3. Fir engraver	34	11,840	16	9,440	50	21,280
4. a. Mountain pine beetle (L) ^{2/}	104	71,200	18	5,440	122	76,640
b. Mountain pine beetle (P)	8	3,360	0	0	8	3,360
c. Mountain pine beetle (S)	1	160	0	0	1	160
d. Mountain pine beetle (W)	69	29,280	239	102,560	308	131,840
5. Oregon pine ips	119	26,880	13	1,760	132	28,640
6. Silver fir beetles	0	0	5	1,120	5	1,120
7. Western pine beetle	76	39,040	7	2,720	83	41,760
All bark beetles	497	217,920	336	137,280	833	355,200
Defoliators:						
8. Black-headed budworm	0	0	51	252,800	51	252,800
9. Larch bud moth	0	0	29	39,520	29	39,520
10. Spruce bud moth	47	46,560	7	5,600	54	52,160
11. Spruce budworm	80	830,960	0	0	80	830,960
All defoliators	127	877,520	87	297,920	214	1,175,440
Sucking insects:						
12. Balsam woolly aphid	277	385,200	224	213,600	501	598,800
All insects	901	1,480,640	647	648,800	1,548	2,129,440

^{1/} Except Lincoln, Pend Oreille, Spokane, Whitman, and parts of Ferry and Stevens counties in northeastern Washington.

^{2/} Mountain pine beetle infestations have been separated by tree species attacked:
L = lodgepole pine; P = ponderosa pine; S = sugar pine; W = western white pine.

5. Oregon pine ips (*Ips oregoni* (Eichh.))

Outbreaks cover 28,640 acres in 1957, compared with 91,940 acres in 1956. Heaviest current damage is on the Rogue River National Forest (6,240 acres), Mount Hood National Forest (3,840 acres), and on the forests in the Blue Mountains of Oregon (8,000 acres). No control is warranted.

6. Silver fir beetles (*Pseudohylesinus* spp.)

Five spots of light epidemic infestation by two species of silver fir beetles, totalling 1,120 acres, were recorded in Pacific silver fir stands on the Mount Baker and Snoqualmie National Forests in 1957. This appears to be a slight build-back of the severe epidemic that started in 1947, reached a peak in 1954, and practically disappeared by 1956. Salvage is recommended.

7. Western pine beetle (*Dendroctonus brevicomis* Lec.)

Severity of western pine beetle infestations increased in 1957. Damage area increased from 16,030 acres in 1956 to 41,760 acres in 1957. In Oregon, heaviest damage is on the Fremont National Forest (8,800 acres) and Warm Springs Indian Reservation (6,560 acres). In Washington, the heaviest damage occurs on the Okanogan National Forest (1,600 acres). Salvage of infested trees and removal of high-risk trees have been widely accepted as regional cutting practices and currently are keeping the pine beetle in check sufficiently so that direct control is not needed.

DEFOLIATORS

8. Black-headed budworm (*Accleris variana* (Fern.))

Epidemic infestations totalling 252,800 acres, all in Washington, were recorded this year, marking the first time in over a decade that this insect has been epidemic in the region. The heaviest infestations are centered on and adjacent to the Snoqualmie National Forest (162,240 acres), where western hemlock, Pacific silver fir, Douglas-fir, and grand fir were attacked. On and adjacent to the Yakima Indian Reservation, 32,320 acres of Douglas-fir and grand fir were attacked. Previous epidemics have occurred principally on the Olympic Peninsula, have lasted about two years, and have then subsided without causing significant tree killing.

A special ground survey in the fall of 1957 indicated no material increase of infestation, and possibly a decrease. On this basis, plus the previous history of the insect in the region, no control is recommended for 1958.

9. Larch bud moth (*Zeiraphera griseana* (Hübner))

Outbreaks in 1957 covered 39,520 acres, mostly on the Okanogan National Forest. Previous epidemics of this moth have risen and disappeared without causing appreciable tree mortality. No control is warranted.

10. Spruce bud moth (*Zeiraphera ratzeburgiana* Sax.)

This introduced moth was epidemic in 1957 on Sitka spruce on 52,160 acres along the Oregon and Washington coasts. The heaviest damage (33,760 acres) occurred on the Siuslaw National Forest. No control is warranted.

11. Spruce budworm (*Choristoneura fumiferana* (Clem.))

The epidemic that began in 1944 is still in progress; after two years of declining infestations, it is once again on the increase. This year 830,960 acres of epidemic infestation were recorded, compared with 536,120 acres in 1956 and 542,430 acres in 1955. All current infestations are on or adjacent to the Malheur, Ochoco, Umatilla, and Wallowa-Whitman National Forests in the Blue Mountain region of Oregon and can be separated into three distinct areas as follows:

	<u>Acres</u>	<u>Percent</u>
Central Blue Mountains area	710,800	85.6
Wallowa Mountains area	101,600	12.2
Southwestern Blue Mountains area	<u>18,560</u>	<u>2.2</u>
Total	830,960	100.0

A timely cooperative aerial spraying program, recommended by the Northwest Forest Pest Action Council and covering 3.8 million acres from 1949 through 1955, averted mass killing of timber by the budworm. Control operations were suspended in 1956 and 1957 because survey and research findings showed a reduced threat of tree killing and a marked increase in effectiveness of natural control.

The Council has recommended that the infestations comprising the Central Blue Mountains area be treated in 1958 by aerial spraying with DDT. A project involving about 812,000 acres (710,800 acres of infestation and approximately 101,200 acres of buffer zones) is planned.

SUCKING INSECTS

12. Balsam woolly aphid (Chermes piceae (Ratz.))

The total acreage of damage by this aphid has continued to increase each year since 1955, as shown below:

	<u>Acreage of damage</u>
1955	294,500
1956	355,990
1957	598,800

The infestation increased only 10,000 acres in Washington in 1957. In Oregon, however, the increase was 233,000 acres, mostly in subalpine fir stands on the Willamette National Forest.

Research on the aphid was given high priority in 1957. An important start was made to investigate the possibilities of biological control by importing a predaceous fly (*Aphidoletes thomsoni* Möhn) from Europe. Eighteen hundred flies were liberated in three heavily infested areas in the region. Whether the predator will become established in our climate is yet to be determined.

Heavy tree killing and marked deterioration of heavily attacked trees was conspicuous in 1957. Considerable progress was made in salvaging dead and dying trees; however, a slowing down of the lumber market seriously affected salvage of Pacific silver fir.

No satisfactory direct control measures are known for this aphid.

MISCELLANEOUS PEST PROBLEMS

Bear Damage

Damage by bears was recorded on 204,960 acres in 1957, compared with 444,140 acres in 1956. Current damage was about equally divided between the western parts of both states, with the largest concentration of damage (83,200 acres) on the Olympic National Forest.

Dying Hemlock

The extent and severity of killing of western hemlock from unknown causes, increased. In 1957, 246,400 acres of dying hemlock was mapped, compared with 125,960 acres in 1956. Current mortality is heaviest on the Mount Baker National Forest and in southwestern Washington. Insects do not appear to be responsible for much of this damage. Salvage of dead and dying trees is the only recommendation possible.